

## VACCINES TO INDUCE MUCOSAL IMMUNITY

### Abstract of the Invention

A bioadhesive mucosal delivery system is used in concert with systemic immunization to develop long-lasting immune responses correlative to protective immunity, especially for the prevention of infection with malaria, tularemia, anthrax, and *H. pylori*. First, the method provides controlled delivery of protective antigens, such as ODNs, to a mucosal site resulting in “priming” of mucosal receptors. Second, the method augments this mucosal prime with parenteral stimulation. In another embodiment, an intranasal vaccine is used in the treatment of tularemia and other bacterial and viral inhalation antigens. The use of CpG motifs in bacterial DNA allows for the activation of the innate immune response that is characterized by the production of immunostimulatory cytokines and polyreactive antibodies. The rapid response system limits the spread of the pathogen prior to specific immunity activation. The use of sustained mucosal exposure lowers the activation threshold of the innate immune system, allowing for a stronger and more rapid response to infection.